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ABSTRACT

This document presents a 50-state estimate of the need for school modernization in the United States along with recommendations. Key findings show the total funding need for public school modernization is $321.9 billion, and that total funding needed for public modernization varies dramatically across states, ranging from $50.7 billion (New York) to $333 million (Vermont). Recommendations offered for addressing the problem include some states using their current budget surpluses for immediate, productive investments in school modernization; more federal assistance to modernize; adequate funding for teacher education to take full advantage of technology; and state level need assessments and action planning. Appendices provide data tables, a school modernization needs assessment questionnaire, data collection matrixes for school modernization needs assessment, calculation of unmet funding need for education technology, descriptive statistics, and state assessments of school infrastructure and education technology and related materials. (Contains 62 references.) (GR)

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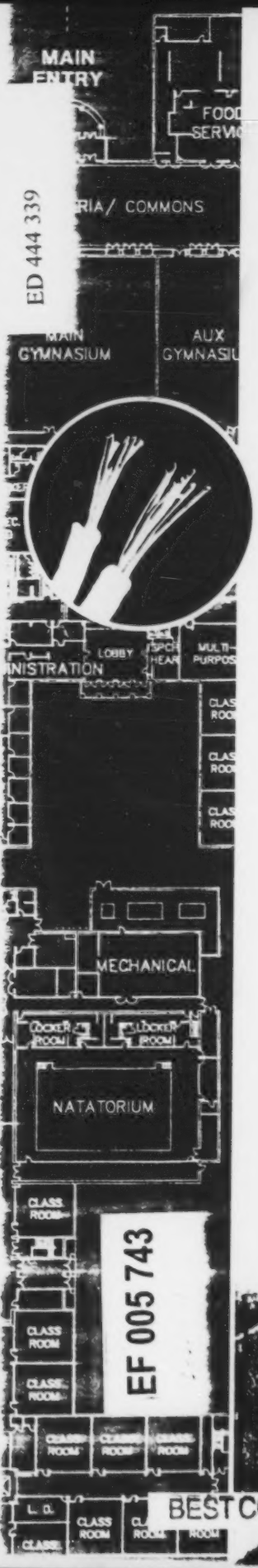

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Contents

Foreword: A Call to Action v

Executive Summary 1

Background 3

Method 5

Findings 9

1. It Will Take Nearly $322 Billion to Modernize U.S. Public Schools 9
2. Funding Needs for School Modernization Vary Substantially 9
3. Funding Needs for Infrastructure Vary Substantially 9
4. Funding Needs for Technology Are Somewhat More Even 9

Discussion and Recommendations 15

1. States with Excess Fiscal Capacity Should Invest in School Modernization Now 15
2. States May Need to Implement Tax and Budget Reforms 17
3. States Should Enact Permanent Structures for Funding School Modernization 17
4. Federal Partnership Is Vital to Funding Modernization 17
5. Professional Development Must Be Built into Modernization Plans 17
6. States Should Develop Plans for Regular Assessment of Modernization Status 18

Notes 19

Appendix A. Data Tables 21

Appendix B. School Modernization Needs Assessment Questionnaire 25

Appendix C. Data Collection Matrixes for School Modernization Needs Assessment 41

Appendix D. Calculation of Unmet Funding Need for School Infrastructure 43

Appendix E. Calculation of Unmet Funding Need for Education Technology 45

Appendix F. Descriptive Statistics 47

Appendix G. State Assessments of School Infrastructure and Education Technology and Related Materials 49

Bibliography 55

Figures

Figure 1. Total Funding Need for School Modernization 10

Figure 2. Funding Need for School Modernization 12

Figure 3. Funding Need for Infrastructure 13

Figure 4. Funding Need for Education Technology 14

Tables

Table 1. Total Funding Need for School Modernization (alphabetical, US$ billions) 11

Table 2. States' Excess Fiscal Capacity in Fiscal 1999 16

Table A1. Funding Need for School Modernization (ranked by total need, US$ billions) 21

Table A2. Funding Need for School Modernization (ranked by infrastructure need, US$ billions) 22

Table A3. Funding Need for School Modernization (ranked by technology need, US$ billions) 23

Table C1. Data Collection Matrix for School Infrastructure Needs Assessment 41

Table C2. Data Collection Matrix for Education Technology Needs Assessment 42

Boxes

Box 1. Components of School Infrastructure Need 6

Box 2. Components of Education Technology Need 7

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Foreword: A Call To Action

Quality teachers, high standards, and a challenging curriculum are all key ingredients to ensuring the success of America's public school students. But we often fail to recognize that **where** *our students learn can have a dramatic impact on what they learn. Research shows that students learn best when they are in safe, modern schools, with smaller classes and up-to-date technology.*

As we enter the 21st century, however, many of our students are still attending schools built in the first half of the 20th. Old is not necessarily bad, but a look around almost any neighborhood will show that our nation's inventory of school facilities is deteriorating—often seriously. In other cases, school buildings are simply not big enough to accommodate surging enrollments. Finally, many of our schools lack even the most basic electrical and telecommunications equipment necessary for connection to the Internet or the use of exciting new education technologies.

More than one-third of America's public schools need major repairs—or total replacement. Students in Baton Rouge, Louisiana, spend their days in classrooms filled with mold and mildew. Classrooms in Orlando, Florida, have such poor air quality that the students are constantly sick. Computers in a Maine elementary school library must be moved to make room for trash barrels catching water from the leaking roof. Students in Monroe, Georgia, have to sell gift-wrap to pay for the wiring necessary for internet connections in their classrooms.

These are the startling images of too many public schools across this country.

The NEA's School Modernization Needs Assessment quantifies what our members have been telling us for years—we have a crisis that is worsening by the day. The results are astounding—some $322 billion are needed for school modernization. The problem affects schools in every part of the country—rural, urban, and suburban alike.

The public overwhelmingly supports federal investment in modernizing our public schools. A recent bipartisan poll of likely voters found that nearly 80 percent supported providing federal dollars to help local school districts renovate, modernize, and rebuild schools.

Clearly, the time is at hand for states and the federal government to take aggressive action to address this crisis. We call on educators, students, parents, and local communities across the country to add their voices to the call for safe, modern, well-equipped schools, staffed by educational professionals knowledgeable in the uses of technology. We call on states to make a substantial, new investment in school modernization now. In addition, states must develop long-term funding solutions. We call on Congress to pass meaningful federal school modernization assistance, including interest subsidies and direct grants and loans that will help address these enormous needs.

Bob Chase

Bob Chase
President, National Education Association
April 2000

Executive Summary

For some time, education finance analysts have been pointing to the serious backlog in funding for maintaining our nation's public schools and equipping them with up-to-date education technologies—collectively termed **school modernization.**

School infrastructure needs range from fixing buildings in disrepair to constructing entirely new facilities to accommodate increases and shifts in student enrollment. Education technology needs include computer hardware and software but also extend to in-school networks and Internet connectivity. It is vital to note, in addition, that students will not be able to use education technology effectively unless their educators also have the opportunity to develop their professional and technical skills and get ongoing support in this rapidly evolving field.

In *School Facilities: The Condition of America's Schools* (U.S. GAO 1995b), the U.S. General Accounting Office concluded that the nation's public schools needed $112 billion just to take care of deferred maintenance, building safety, and accessibility. Yet neither the GAO's work nor any of the several other studies completed by the mid-1990s had state-by-state data for an estimate of the dimensions of the need for public school modernization. The present research sought to develop such a 50-state estimate.

The School Modernization Needs Assessment collected and analyzed data from four principal sources: the research literature, research databases, the NEA's annual survey and analysis of state school finance legislation, and a comprehensive questionnaire sent to NEA research affiliates in all 50 states. On infrastructure, the study received usable responses from 23 states that met criteria for accuracy and timeliness of data; on education technology, the study used data from 2 states. The remaining data were derived by estimation techniques described in the report. The lack of complete original data from all states reflects two unfortunate facts: few states regularly update infrastructure assessments, and most state technology plans do not contain cost estimates.

The key findings of the study are as follows:

- **The total funding need for public school modernization is $321.9 billion.** Of that total, $268.2 billion are for school infrastructures, and $53.7 billion are for education technologies. The nearly $322 billion figure is substantially larger than previous research has indicated, but it is not an exaggeration; rather, the higher estimate reflects the more comprehensive and more up-to-date character of the study.
- **The funding needed for public school modernization varies dramatically across states.** The need ranges from $50.7 billion in New York to $333 million in Vermont. It is important to note that several variables affect state need, including current enrollments, patterns of growth in enrollments, age and condition of infrastructure, and regional cost differences.

The study offers some observations and recommendations for addressing the problem:

- **Some states could use their current budget surpluses to make immediate, productive investments in school modernization, but that is still a partial and short-term solution.** In the long run, states must enact permanent funding structures, similar to those for operating costs, to avoid future crises.
- **The public schools need meaningful federal assistance to modernize.** Even though funding of education is constitutionally a state responsibility, the federal government historically has assisted in funding educational needs national in scope, emphasizing assisting states with large unmet funding needs and low fiscal capacity. The federal government will have to expand that role if the states are to succeed in modernizing.

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I'll never forget the look on my kids' faces when they saw their new school and walked into their new classroom. I felt it too. There wasn't space for my class in the old school, so we were isolated in a church basement without windows. I felt like I had moved from a dungeon into Cinderella's castle. That new classroom made all the difference to those children—the amount of space, the light, the colors. Their attitude about school changed from that moment on.

— Pam Coleman, kindergarten teacher
Twin Valley School, West Alexandria, Ohio

- **Adequate funding for professional development and ongoing technical support are critical so that teachers and other education professionals may take full advantage of technology.** Investments in education technology, such as hardware and software, cannot be optimized unless education professionals have access to the types and amounts of professional development and support that will enable them to integrate technology into the curriculum and the classroom.
- **Modern public schools require an assessment of need and a plan of action at the state level.** Such plans and assessments must include realistic cost figures.

As the accounts of teachers, administrators, and students alike attest, safe, well-constructed public schools with up-to-date technologies are crucial in preparing today's students for life and work in the 21st century. Today's students will soon be competing for jobs in a global marketplace whose dimensions were unimaginable a generation ago. They will live in a society rich with information. They will have easy access to vast databases. They will be the analytical, collaborative, innovative, problem-solving workers American business and industry needs—*if we take the responsibility to educate them for these tasks.*

The best public schools are not merely functional and economical spaces but demonstrate a community's commitment to education by creating an effective learning environment. Research had already shown that computer-assisted instruction has positive effects on students' learning. Moreover, some of the most recent studies have been pointing to the potential for education technologies to improve student achievement around a broad set of higher-order thinking skills. Overall, it is apparent that students who are lucky enough to attend modern and technologically well-equipped schools are more committed learners; staff who work in them are empowered and excited educators.[1]

By the same token, overcrowded classrooms and structurally unfit school buildings undermine students' achievement and discipline and compromise the safety of staff and students alike. Unfortunately, too many of our students attend schools plagued by leaky roofs, faulty wiring, and outdated plumbing. Too many spend years studying in "temporary" trailers. And too many sit in classrooms—nearly half—that lack adequate wiring for Internet access.

Where and how will we educate the coming generation? As this study reports, it will take a massive, systematic investment of nearly **$322 billion** to bring all our nation's students out of crowded and crumbling facilities and put them into the safe, clean, and technologically updated classrooms they need. This figure is nearly **triple** the price tag put on the task by the U.S. General Accounting Office and other studies of the early and mid-1990s. But the new study is neither an exaggeration nor a false alarm. Rather, it goes beyond the GAO studies, which used a limited sampling of schools, by providing a more comprehensive 50-state assessment, one that gives an even more sobering picture.

This report details the specific needs for repair and for technological updating, suggests the dimensions of the problem in individual states, and poses various possible solutions.

Background

Problems with deferred maintenance of our nation's public schools have been drawing the attention of education researchers since the 1980s. The courts had already been hearing concerns about school districts that could not afford to fund programs and structures as well as their neighbors.

By the 1990s, state supreme courts, finding schools violating health and safety codes or lacking necessary facilities such as libraries or science laboratories, began to rule that all districts, not just wealthy ones, must have sound schools. State legislatures, too, began responding more broadly to the need to modernize schools during the late 1990s by passing an increasing number of bills relating to funding of school infrastructures.[2]

Recognition of the need to fund education technology in particular is more recent, dating from the late 1980s. In part, as with infrastructures, the funding needs for education technologies gained prominence from lawsuits arguing that students in poverty should have access to the kinds of facilities and learning tools available to more affluent children. But the most significant impetus stemmed from the growing concern among educators and the public that students need to become technologically competent if they are to secure well-paying jobs in the "new economy." The states apparently began the policy focus on education technology. By 1996, 27 states had some type of education technology assessment or plan in place (38 states had them as of 1999). As with school infrastructure, the states have passed an increasing number of bills for funding education technology in recent years. Nonetheless, planning and funding for education technology have varied tremendously from state to state.[3]

The federal government began to focus intensively on both the infrastructure and education technology issues toward the mid-1990s, when a series of studies by the U.S. General Accounting Office estimated the funding needs of school infrastructures at the national level. At approximately the same time, President Clinton and Vice President Gore announced the Technology Literacy Challenge. The Challenge established goals for training, equipping, and connecting educators and students with computers and technology, for which $425,000 were appropriated in 1999 and 2000.[4]

We are constantly learning how to use this building in different ways. Between the building itself and the technology, we have so many more opportunities than we did in our old school. Everything about this building has enhanced our program—our ability to team, communicate, expand student activities, involve parents, and bring in the community. Does this building make a difference? It's like night and day.

— Virgil Taueg, principal,
Lincoln Middle School, Indianapolis, Indiana

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Method

With many studies already published and an increasing trend apparent in state funding legislation for public school modernization, one might well ask why another study would be necessary. The answer is in the partial nature of both the analyses and the solutions.

Many of the existing research reports have tried to estimate the funding needs for various aspects of school modernization, such as deferred maintenance or a particular student–computer ratio. Other studies have been basically descriptive, painting pictures in words and photos of deplorable school conditions that give a compelling impression of need.

But analyses using fiscal estimates based on a comprehensive definition of school modernization are essential if state and federal legislators are to understand the full scope of the issue and address funding of school modernization systematically and quantitatively. This study is a first effort at such a state-by-state assessment.

The report used data from four major sources:

- **Policy and research literature,** including research library catalogs, government publications, and the web sites of state departments of education or equivalent agencies.
- **Policy and research databases,** including proprietary databases such as Lexis-Nexis, StateNet, NCSLNet, and State Policy Archives, an online database of the Council of State Governments.
- **The NEA's annual "Survey of State School Finance Legislation."** The 1999 volume, on the 1998 legislative session, provides a five-year trend analysis of state school finance legislation.
- **The NEA's Modernization Needs Assessment Questionnaire** (1999).

The results of the data collection are illustrated and discussed in the Findings section of the main text, and complete data tables are presented in Appendix A.

The study team developed the Modernization Needs Assessment Questionnaire in March 1999 and distributed it to education finance contacts in NEA state affiliates in June 1999. Appendix B reproduces the complete questionnaire. State contacts were questioned about both infrastructure needs and education technology needs.

In brief, **infrastructure needs** comprise activities such as fixing facilities that have fallen into disrepair and building new schools to accommodate increases and shifts in enrollment. Education **technology needs** include not just computer hardware and software but also networks, connectivity, distance education, and professional development for the educators who are to make use of classroom technology. Boxes 1 and 2, respectively, summarize the various components of the comprehensive definitions of school infrastructure needs and education technology needs, as used in the survey.

The state contacts received instructions for a standard procedure of data collection. All 50 state contacts responded to the questionnaire. The study used three levels of analyses of state assessment data, depending on whether data existed and on the completeness of the data. The study used the first level of analysis for state data that met three criteria:

- The state assessment must have been conducted *within the last five years* so that the data would be more current than data of the most recent studies such as those of the U.S. Government Accounting Office.
- The assessment had to be reasonably complete with regard to representation of the components of the study's comprehensive definitions of school infrastructure and technology (for the full text of the definitions, see the questionnaire, Appendix B).

Box 1. Components of School Infrastructure Need

- **Deferred maintenance.** This is maintenance needed to bring school facilities up to good condition—that is, to where they need only routine maintenance. Deferred maintenance can essentially mean replacement of facilities in extremely bad repair.
- **New construction.** Factors that may trigger a need for new school facilities (as well as accompanying grounds, fixtures, equipment, and furniture) include overcrowding; governmental mandates (e.g., measures to reduce class sizes); or projected enrollment growth.
- **Renovation.** Renovation includes remodeling to improve health and safety as well as to provide accessibility for the disabled.
- **Retrofitting.** Retrofitting aims at making an existing facility ready for technology (e.g., by installing additional phone lines or fiber optic cables) or at improving its energy efficiency (e.g., by installing insulation or energy-conserving windows).
- **Additions.** These may be necessary to relieve overcrowding, to meet governmental mandates, or to accommodate projected enrollment growth. The cost of additions usually includes the fixtures, major equipment, and furniture necessary to furnish them.
- **Major improvements to grounds.** These are improvements to school grounds, such as landscaping and paving.

- Cost estimates associated with state assessments had to appear reasonable; that is, the assessments had to demonstrate a linkage between needs and cost. For example, an arbitrary assignment of a state appropriation to a state assessment of unmet funding need was not judged a reasonable cost estimate.

Among the states, 30 (60 percent) had infrastructure plans, and 23 met criteria for calculating funding needs in this area. Although 38 states (75 percent) had developed technology assessments or plans, only 3 met survey standards for calculating funding need in the education technology area.[3]

Initially, the study plan called for the development of a multivariate statistical model to estimate unmet funding need for states without assessments. Such a model would have been used to select the most powerful variables for predicting unmet funding need. Because an insufficient number of state assessments were available, particularly in the area of education technology, the study used a more conceptual approach. This conceptual approach extrapolated state need from a review of policy and research literature and databases and matched the state with another state with similar student and demographic profiles. This level of analysis relied on a set of variables, including current student enrollment and enrollment trends. The study used the state's degree of urbanness (i.e., the ratio of students in urban districts to all students in a state) as a reasonable proxy for poverty; age and condition of school facilities; and, to some extent, regional cost factors. Urbanness, of course, is less reliable as a proxy variable for unmet need in more rural, sparsely populated states. The survey used this matching approach to derive need for infrastructure funding in 27 states. The study did not use matching analyses to derive funding need for education technology.

The third level of analysis for calculating unmet funding need was a benchmarking approach. That is, if the study could not acquire data that met the criteria for calculating a state's need or could not use the matching approach just described, then it calculated unmet need on the basis of the median of the states in the previous two categories. This represented overall a fiscally conservative approach, and it may understate the unmet need of states in some cases. The study used the benchmarking approach to derive technology need in 48 states. Three states—California, Connecticut, and Delaware—had comprehensive data and reasonable cost estimates. Of these three states, Delaware was used as the benchmark or

The more people use our schools, the more they associate with us, identify with us, use our services and facilities—the better chance we have for enlisting the community's support when we need it.

— *Dr. C. Douglas Parks, Superintendent, Aptakisic-Tripp Community Consolidated School District No. 102, Illinois*

Box 2.
Components of Education Technology Need

- **Multimedia computers.** These are generally the newer, faster, and more powerful computers that typically come with sound capability, high-resolution graphics, internal CD-ROM drives, and an internal modem for Internet access.
- **Peripherals.** Among peripherals are printers, digital cameras, scanners, computer projection units, and assistive/adaptive devices (to enable individuals with physical disabilities or limitations to use the technology). Items typically found in multimedia computers (e.g., CD-ROMs, zip drives, or modems) may be considered peripherals as external add-ons to older computers.
- **Operating, applications, and educational software.** Software that runs a computer, such as Windows, is operating software. Applications software comprises programs such as word processing and spreadsheets. Educational software is specifically designed for student learning.
- **Connectivity.** Connectivity includes Internet access, video conferencing, and videophones.
- **Networks.** Local area networks (LANs) and wide area networks (WANs) link computers within a school or district, allowing them to share software and peripherals.
- **Technology infrastructure.** This includes wiring and cables to, within, and between schools to support educational technology. (This category may overlap with "retrofitting" under the comprehensive definition of school infrastructure needs.)
- **Distance education.** Distance education includes the use of a number of technologies to allow teaching of courses at remote sites.
- **Maintenance and repair of technology equipment.** Ongoing expenses over the life of the equipment are needed to keep schools' computers and peripherals functioning properly.
- **Professional development and ongoing support.** If teachers and other educational professionals are to use technology effectively to enhance student learning, they must themselves have adequate training and support.

We were so overcrowded in our school before the modernization (that) we had our computer lab in the hallway. There was simply no other place for kids to use the computers. We also had to use the hallway for conferences. Now, our new computer lab enables use to bring kids in, and the time spent is much more valuable. We're also able to hold workshops there for our teachers. On a daily basis, I see my staff looking for new and better ways of doing things, because they're working in new and better facilities. There's so much pride here now."

— Steven E. Carroll, principal
Hillcrest Elementary School, Delphi, Indiana

median state of the group and served as the basis for estimating the unmet funding need for the remaining states and Connecticut (although Connecticut had usable assessment data, it was leveled up to the benchmark).

Appendix C provides the data collection matrixes for the needs assessment. Appendix D identifies states whose infrastructure assessment data met criteria for completeness as well as states that were matched for calculation purposes. Appendix E identifies states with recent technology or assessment plans. Appendix F provides descriptive statistics. Appendix G provides a complete listing of state assessments and related documents.

The NEA's study is thus more comprehensive than the GAO studies of the early and mid-1990s, but it, too, must rely on statistical inferences to fill in inadequacies and gaps in the data. Only about half the states have conducted school infrastructure assessments in the last five years, and few of those plan to update such assessments regularly in the future. Moreover, the accuracy of the states' cost estimates varies depending on whether they were based on school district self-assessments, a professional assessment, or a combination of both. For example, Ohio study participants report that school districts in the state typically underestimate education technology costs by reporting the capital cost of acquisition, not the cost of ownership. In Ohio, acquisition costs constitute only 18 to 20 percent of the cost of ownership. Education technology ownership costs include system maintenance, hardware and software replacement, and professional development. About three-fourths of the states do have technology plans, but most of them do not include cost estimates.

Thus, because of the nature of the data; the need to estimate; and because study data could be as much as five years old according to the criteria, a still more comprehensive survey might well reveal the NEA's estimates as fiscally conservative.

Findings

When it comes to evaluating the dimensions of our national need for school infrastructure and technology investments—collectively termed modernization *here—the NEA study yields four principal insights.*

1. It Will Take Nearly $322 Billion to Modernize U.S. Public Schools

The study indicates that $321.9 billion will be needed for modernizing U.S. public schools. This sum breaks into $268.2 billion for school infrastructure and $53.7 billion for education technology (see Figure 1). It should be noted that infrastructure estimates are generally based on 5- to 10-year projections, because repairs and new construction can be estimated with some certainty in that range and sometimes longer. Assessments for education technology, in contrast, are generally calculated using a 3- to 5-year range, reflecting the rapidity of change in that field.

The NEA estimate is clearly much more than previous research has indicated, and the nearly $322 billion total amounts to 10 times what states currently spend, on average, on public school infrastructure. The new NEA figures, it should be noted, are based on a more comprehensive set of criteria than those of the U.S. GAO, which used 1994 data and focused on specific areas of infrastructure alone.[6]

Table 1 shows the NEA data on the funding need for infrastructure and technology, along with the total need (i.e., the funding need for modernization), alphabetically by state.

2. Funding Needs for School Modernization Vary Substantially

The study found that the funding need for school modernization ranges from $50.7 billion for New York to $333 million for Vermont. Although all states have some need, the top five states—New York, California, Ohio, New Jersey, and Texas—account for more than 40 percent of total need.[7] In particular, states with large urban populations, such as New York, generally face higher construction costs and have higher concentrations of older school buildings. Actually, concentration of urban school districts within a state is one of the most reliable predictors of that state's price tag for school modernization. However, total need reflects a number of factors, such as current enrollments, projected enrollment growth, age and condition of school infrastructure, and regional cost factors.

Figure 2 presents a rank-ordered listing of states by total funding need.

3. Funding Needs for Infrastructure Vary Substantially

Looking at school infrastructure separately, funding needs total $268.2 billion. The need ranges from $47.6 billion in New York to $220.1 million in Vermont. Here, the top five states—New York, Ohio, California, New Jersey, and Texas—account for almost 46 percent of the total need, one that again is evident in states with large urban populations.[8]

Figure 3 ranks states by funding need for school infrastructure.

4. Funding Needs for Technology Are Somewhat More Even

The total unmet funding need for education technology, considered separately, is $53.7 billion. The need ranged from $10.9 billion in California to $103.5 million in Wyoming. Unlike school infrastructure needs, education technology needs showed a more even distribution among states from low to high funding need. However, California represented by itself 20 percent of the total, and the top five states again represented more than 40 percent of the total.

Figure 4 lists states by funding need for education technology.

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Figure 1.
Total Funding Need for School Modernization (US$ billions)

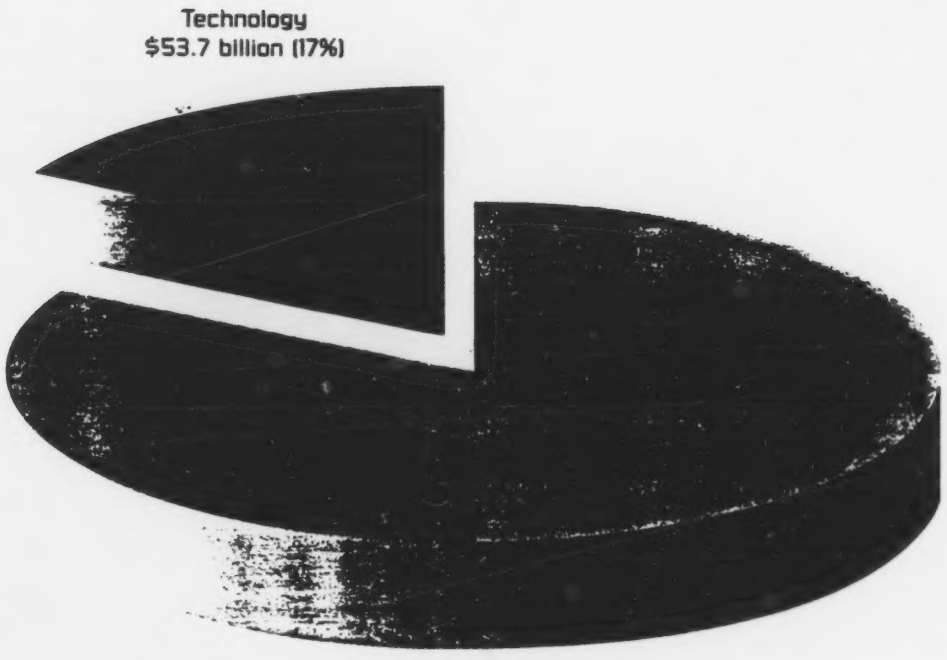

Table 1.
Total Funding Need for School Modernization (US$ billions)

State	Infrastructure	Technology	TOTAL
Alabama	1,519,210,061[a]	791,643,056[c]	2,310,853,117
Alaska	727,014,291[b]	141,780,576[c]	868,794,867
Arizona	4,748,568,494[b]	920,959,488[c]	5,669,527,982
Arkansas	1,761,701,495[b]	494,704,416[c]	2,256,405,911
California	22,000,000,000[a]	10,901,183,414[a]	32,901,183,414
Colorado	3,805,239,627[a]	738,005,536[c]	4,543,245,163
Connecticut	5,000,000,000[a]	555,226,320[c]	5,555,226,320
Delaware	1,046,354,648[b]	120,021,120[a]	1,166,375,768
Florida	3,300,000,000[a]	2,187,697,936[c]	5,487,697,936
Georgia	7,061,967,931[b]	1,474,984,096[c]	8,536,952,027
Hawaii	752,533,936[b]	202,909,232[c]	955,443,168
Idaho	699,469,537[a]	268,321,600[c]	967,791,137
Illinois	9,213,000,000[a]	2,115,098,880[c]	11,328,098,880
Indiana	2,477,797,613[b]	1,059,940,000[c]	3,537,737,613
Iowa	3,359,129,953[a]	539,794,880[c]	3,898,924,833
Kansas	1,793,250,000[b]	503,561,280[c]	2,296,811,280
Kentucky	2,441,607,196[a]	685,628,688[c]	3,127,235,884
Louisiana	3,104,098,619[b]	836,972,576[c]	3,941,071,195
Maine	452,064,540[a]	232,710,832[c]	684,775,372
Maryland	3,891,926,876[b]	893,500,208[c]	4,785,427,084
Massachusetts	8,919,014,500[b]	1,023,047,120[c]	9,942,061,620
Michigan	8,071,127,040[b]	1,852,952,000[c]	9,924,079,040
Minnesota	4,517,232,516[a]	906,590,400[c]	5,423,822,916
Mississippi	1,038,890,864[b]	541,354,640[c]	1,580,245,504
Missouri	3,475,160,989[b]	975,861,968[c]	4,451,022,957
Montana	901,492,663[b]	175,806,928[c]	1,077,299,591
Nebraska	1,608,849,896[b]	313,754,032[c]	1,922,603,928
Nevada	5,256,000,000[a]	317,977,712[c]	5,573,977,712
New Hampshire	409,511,478[b]	210,805,584[c]	620,317,062
New Jersey	20,709,650,065[b]	1,319,695,248[c]	22,029,345,313
New Mexico	1,410,624,747[a]	339,560,288[c]	1,750,185,035
New York	47,640,000,000[a]	3,035,796,800[c]	50,675,796,800
North Carolina	6,210,938,727[a]	1,314,586,096[c]	7,525,524,823
North Dakota	420,000,000[a]	125,223,536[c]	545,223,536
Ohio	23,000,000,000[a]	1,977,840,000[c]	24,977,840,000
Oklahoma	2,204,070,041[b]	670,011,792[c]	2,874,081,833
Oregon	2,407,425,974[b]	579,506,048[c]	2,986,932,022
Pennsylvania	8,465,134,387[b]	1,943,407,360[c]	10,408,541,747
Rhode Island	1,420,952,603[b]	162,989,024[c]	1,583,941,627
South Carolina	2,574,018,400[a]	694,044,960[c]	3,268,063,360
South Dakota	498,604,766[b]	151,570,080[c]	650,174,846
Tennessee	2,273,702,904[a]	971,081,920[c]	3,244,784,824
Texas	9,467,620,774[a]	4,186,434,432[c]	13,654,055,206
Utah	8,490,336,757[b]	513,648,800[c]	9,003,985,557
Vermont	220,090,007[b]	113,296,464[c]	333,386,471
Virginia	5,701,313,528[a]	1,190,793,680[c]	6,892,107,208
Washington	5,478,902,777[b]	1,062,603,920[c]	6,541,506,697
West Virginia	1,000,000,000[a]	322,390,064[c]	1,322,390,064
Wisconsin	4,762,337,059[b]	955,782,336[c]	5,718,119,395
Wyoming	530,888,665[a]	103,532,688[c]	634,421,353
TOTAL	268,238,826,944	53,716,590,054	321,955,416,998

[a] Existing state assessment used to calculate funding need (see Method section for details).

[b] Funding need extrapolated based on ability to match selected demographic and student variables with those of a similar state (see Method section for details).

[c] Funding need calculated using benchmarking or median state need (see Method section for details).

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Figure 2.
Funding Need for School Modernization

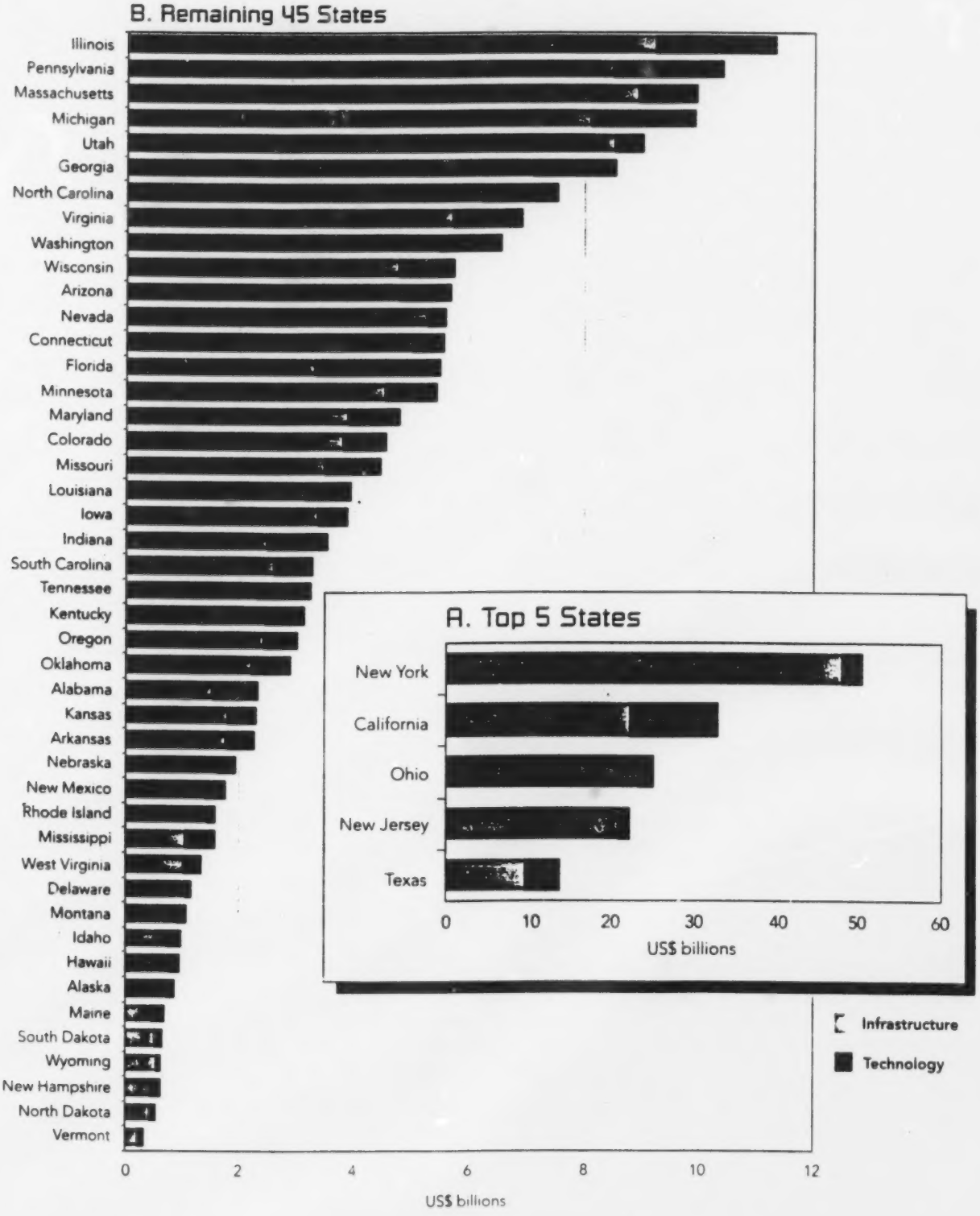


Figure 3.
Funding Need for Infrastructure

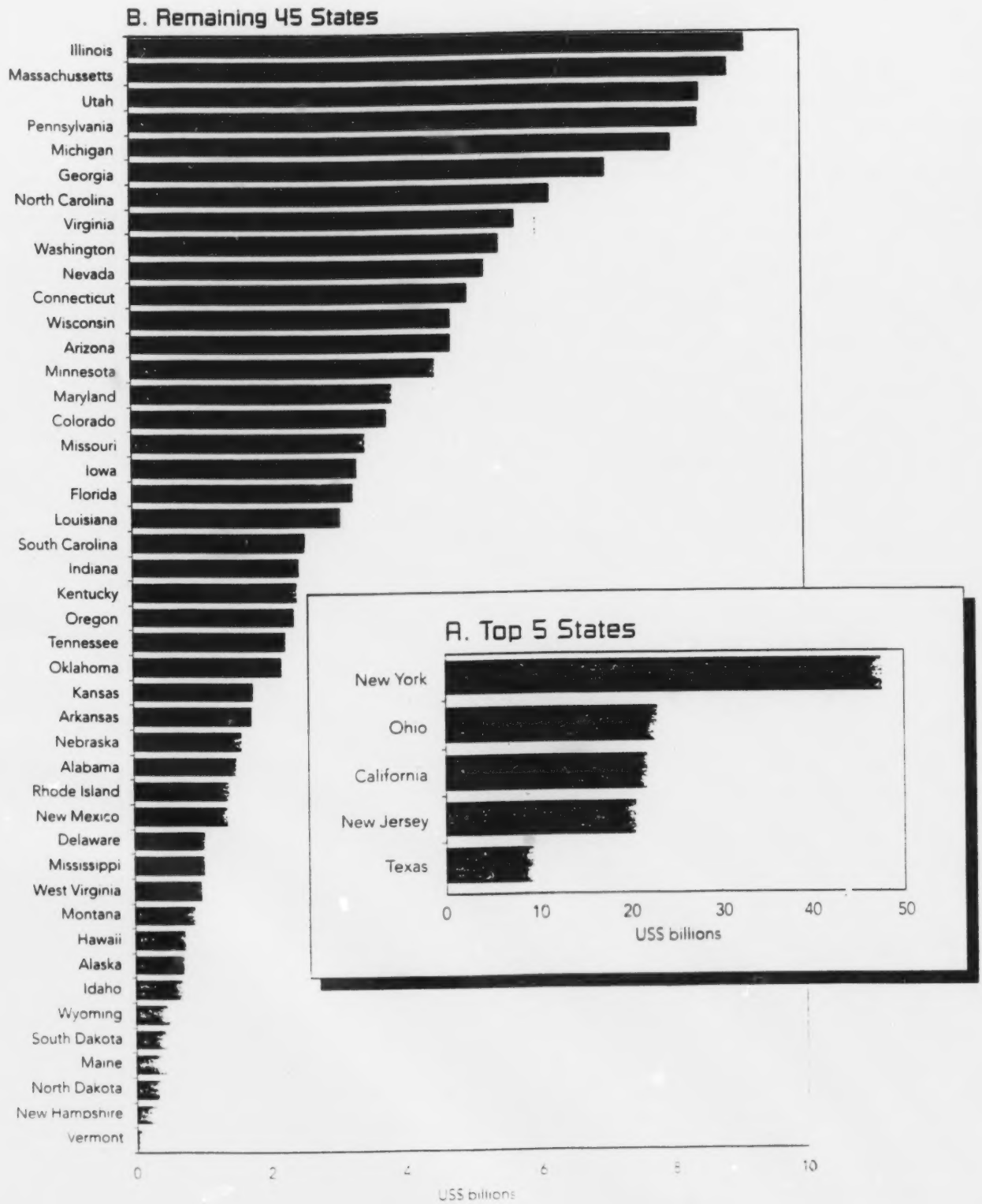
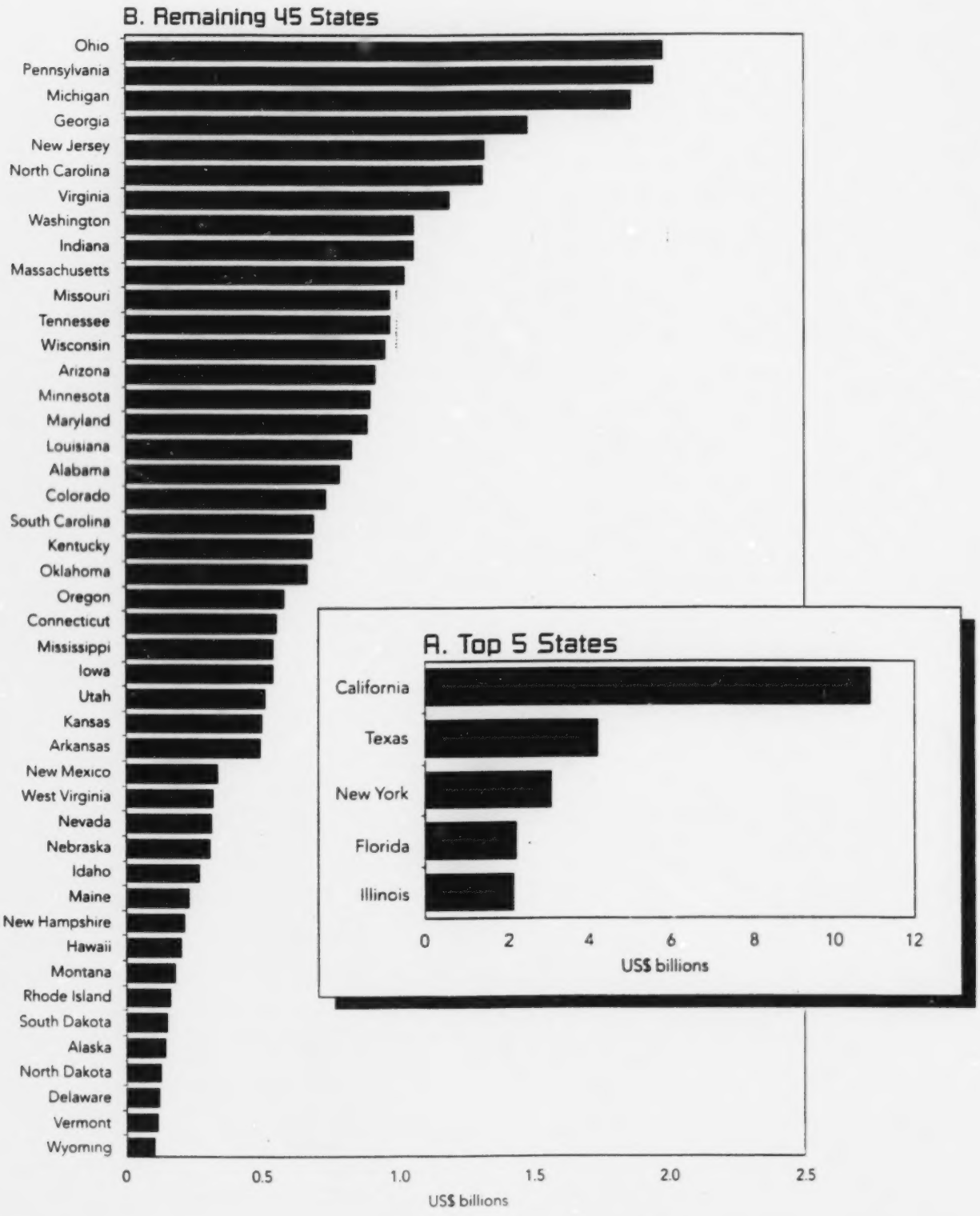


Figure 4.
Funding Need for Education Technology



Discussion and Recommendations

The quality of facilities and education technology among schools across the country varies widely. Both anecdotal evidence and research studies provide compelling portraits of starkly differing school conditions. Some students spend their school days in comfortable, well-equipped classrooms staffed by professionally and technically knowledgeable educators and equipped with multimedia computers, most connected to the Internet.

Other students, particularly those in areas of poverty or in rapidly growing communities, must learn under frankly adverse conditions: classrooms too hot, too cold, too humid, too crowded, and lacking the instruction and technologies they need.

The School Modernization Needs Assessment sought to quantify those types of deficiencies by developing state-by-state assessments of unmet funding need. Results of the assessment indicate that states' funding need for school modernization, $321.9 billion, is substantially larger than previous research indicates. Of that total, $268.2 billion represents school infrastructure needs, and $53.7 billion, education technology needs. Like the dramatic differences in classroom conditions outlined above, funding needs for school modernization vary dramatically across states, and that will require states to analyze their own conditions carefully and to craft sensible strategies to effect this modernization.

Even states that can devote their current surpluses to school modernization are unlikely to be able to foot the total cost for school modernization. Thus, none of the states should see school modernization as a problem susceptible to a "quick fix."

Right now, the country should consider the following strategic recommendations for modernizing our schools.

1. States with Excess Fiscal Capacity Should Invest in School Modernization Now

A number of states have used recent economic prosperity to amass substantial surpluses. In fiscal 1999, states' surpluses or "rainy day" funds totaled $31 billion and ranged from $3.4 billion in Alaska (some 130 percent of Alaska's total state expenditures) down to $2 million in Louisiana (only 1 percent of total state expenditures). The average state surplus for fiscal 1999 was 7.1 percent.[10] Table 2 shows each state's excess fiscal capacity.

Using such surpluses to create "rainy day" or reserve funds in preparation for times of economic decline or stagnation is a prudent fiscal policy. But it is equally sensible to put some of today's excess funds into students' education, an investment that will pay dividends to society long into the future. Some 14 states have double- or triple-digit percentages of excess fiscal capacity, and 30 in all have excess fiscal capacity greater than 5 percent.

In short, some states have the ready cash to make immediate, large-scale investments in school modernization, and they should do so. Other states clearly do not have the resources (a small number of states have no surpluses, and nine states have surpluses of 3 percent or less). Yet even states that can devote their current surpluses to school modernization are unlikely to be able to foot the total cost for school modernization. Thus, none of the states should see school modernization as a problem susceptible to a "quick fix."

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Table 2.
States' Excess Fiscal Capacity in Fiscal 1999

State	Expenditures (in US$ millions)	Total balance* (in US$ millions)	Balance as % of expenditures*
Alaska	2,316	3,015	130.2
Indiana	8,443	1,657	19.6
Delaware	2,256	402	17.8
Iowa	4,509	725	16.1
Wyoming	518	78	15.1
Nevada	1,534	221	14.4
Texas	26,906	3,761	14.0
Michigan	8,792	1,144	13.0
Nebraska	2,229	287	12.9
Kansas	4,193	524	12.5
Minnesota	11,375	1,427	12.5
Oklahoma	4,484	523	11.7
North Dakota	761	78	10.2
Mississippi	3,119	311	10.0
Vermont	763	75	9.9
Washington	9,759	904	9.3
Oregon	4,557	408	9.0
Maryland	8,464	752	8.9
Colorado	5,282	421	8.0
New Mexico	3,147	249	7.9
Hawaii	3,194	249	7.8
South Carolina	4,804	364	7.6
Ohio	18,478	1,334	7.2
Arizona	5,874	398	6.8
Florida	18,059	1,185	6.6
Massachusetts	18,385	1,173	6.4
Illinois	21,386	1,200	5.6
Maine	2,167	118	5.5
South Dakota	734	40	5.4
Connecticut	9,972	519	5.2
New York	36,779	1,669	4.5
Pennsylvania	17,994	813	4.5
Kentucky	6,547	288	4.4
Rhode Island	2,044	89	4.3
North Carolina	12,519	523	4.2
New Jersey	17,739	700	3.9
Tennessee	6,320	227	3.6
Virginia	9,923	361	3.6
Idaho	1,611	56	3.5
California	57,262	1,950	3.4
Utah	3,237	99	3.1
Missouri	6,905	202	2.9
Georgia	12,550	366	2.9
West Virginia	2,721	67	2.5
Montana	1,038	25	2.4
New Hampshire	950	22	2.3
Wisconsin	10,048	13	1.9
Arkansas	3,009	37	1.2
Alabama	4,828	29	0.6
Louisiana	5,805	2	0.0
TOTAL	436,289	31,078	7.1

*Total balances include both the ending balances and balances in budget stabilization funds.

Source: Calculated from NGA and NASBO (1998).

21

It's important to have a nice school because it's kind of like a home away from home. At school, you should feel comfortable and not afraid.

— Alex Yastrow, fifth-grade student
Meridian Middle School Buffalo Grove, Illinois

2. States May Need to Implement Tax and Budget Reforms

Ensuring modern, safe, well-equipped school facilities requires not merely immediate investments but ongoing funding. All states are not created equal with regard to tax effort and revenues available for education. For example, states that rely heavily on one or two major taxes periodically find themselves in budget crises. In a few years, even some states that are presently in surplus will be unable to fund education and other public services at current levels, much less to make substantial new investments in school modernization. The problem is those states' outmoded tax structures, which are failing to capture sufficient revenues from a changing economy. Those states must consider fiscal reform if they are to avoid structural deficits that endanger education.

3. States Should Enact Permanent Structures for Funding School Modernization

Such structures should have as their long-term goal the same level of support the state currently gives to school districts for operating costs. It is important to remember that the current level of state support for public elementary and secondary education operating costs evolved over many decades to its present state average of 50 percent.[12] Even so, differences remain extremely large across states with regard to level of state support—from 73 percent in New Mexico to 8 percent in New Hampshire. Thus, achieving parity between funding of school district operations and modernization will likely be a long-term endeavor.

4. Federal Partnership Is Vital to Funding Modernization

Certainly the magnitude of unmet funding need alone for school modernization argues for a substantial federal role. Although education is constitutionally a state responsibility, the federal government has a long history of providing states and localities with financial assistance for education when concerns of national scope have been involved. For example, in the National Defense Education Act (1958), the federal government funded a nationwide effort to upgrade the education for students in mathematics, science, and foreign languages and provided financial aid for teacher preparation. Similarly, in the Elementary and Secondary Education Act of 1965, the federal government provided funding for the education of students in poverty. Another example of federal funding is the Education of All Handicapped Act of 1975, which sought to remedy inequities in the education of students with disabilities.[13]

5. Professional Development Must Be Built into Modernization Plans

Recent research points to the positive role of technology in improving both students' basic skills and their higher-order thinking. The research attributes a substantial portion of students' success in this area to teachers and other education professionals who have developed their own technological expertise so that they can direct students' use of it effectively (ETS 1998; Mann et al. 1999). Because education technology is a rapidly changing field, and because educators bring differing levels of technical expertise to the classroom, educators need professional development and training opportunities, along with continued support of their knowledge and skill.

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6. States Should Develop Plans for Regular Assessment of Modernization Status

Such assessments of school modernization needs—preferably performed annually—should include realistic cost estimates and measures of progress toward meeting long-range goals.

As noted in the Method section, only about half of states have school infrastructure assessments that were conducted in the last five years. Few states have provisions to update their infrastructure assessments regularly. On the other hand, approximately three-fourths of states have technology plans, but most of them do not contain cost estimates. Until states regularly assess unmet school modernization needs and develop plans to meet them, more accurate cost estimates cannot be developed. The unmet funding needs of $322 billion presented here represent a fiscally conservative estimate. If states systematically assess and cost out unmet school modernization needs, the total will probably be much higher.

As the quotations in this document attest, students, teachers, parents, and administrators freely and widely testify to the crucial importance for education of fundamentally sound and modern school conditions.

Research indicates that effective use of technology by educators and students can improve student achievement, particularly when teachers have received adequate training in directing students' use of computers. Emerging research points to the importance of the condition of the physical environment in enhancing student achievement.

Every student deserves to spend the day in a safe, modern school staffed by education professionals who have the training and expertise to assist students with the mastery of the academic and technological skills. But the nation still has a long way to go before it can provide these conditions to all students.

Given the enormity of unmet funding needs for school modernization, a substantially larger, long-term state role is necessary, with continuing federal assistance. Equitable and adequate student access to technology in school facilities that are modern and safe is an ongoing responsibility that requires ongoing funding.

Notes

[1] On computer-assisted instruction, see Kulik and Kulik (1991) and Liaio (1992). On higher-order thinking, see Wenglinsky (1998). Some researchers (see Mann and others 1999) are continuing research in this area through longitudinal studies.

[2] Studies began appearing in the education finance literature as early as 1983 (AASA and others 1983). These were followed by a study targeting rural and small schools' funding needs for deferred maintenance and replacement (Honeyman and others 1988) and two national studies (Lewis 1989; Hansen 1992).

See Thompson (1990) for background on school finance litigation. See Crampton and Whitney (1995) for information on legislative responses in the mid-1990s.

The number of bills legislatures passed increased from 18 in 1994 to 70 in 1997. Largely because fewer legislatures were in session in 1998, the number of bills passed dropped slightly, to 60. The near-quadrupling of infrastructure funding bills indicates an increased interest by legislatures in the area, but of course that does not necessarily indicate higher appropriations in all cases (NEA 1999b).

[3] A 1994 study by the Children's Partnership observed that in 1984 only 25 percent of jobs required technology skills, but by 1993, the proportion of technology jobs had almost doubled to 47 percent. By 2000, the study estimated, more than 60 percent of jobs would require such skills.

The earliest state education technology plans were in Texas and Virginia in 1988. Planning activity peaked in 1995 when six states—Colorado, Connecticut, Maryland, Mississippi, New Mexico, and South Carolina—completed education technology plans. State technology planning does not necessarily mean state technology funding, however (U.S. Department of Education and the Software Publishers Association 1996). Data this study collected indicate that at least 14 states had no funding for education technology. Another 10 states and the District of Columbia chose nontraditional funding routes, such as the use of competitive grants, private donations, and federal funds, such as grants from Title I, Goals 2000, and the National Science Foundation (Crampton 1997).

Whereas in 1994, only 4 education technology funding bills passed, in 1997, 29 passed. In 1998, the number diminished to 19, still a fivefold increase from the 1994 legislative session (NEA Research 1999).

[4] For the U.S. GAO studies, see, for example, U.S. GAO (1995a, 1996a). The Technology Literacy Challenge (U.S. Department of Education 1996) set four goals. (1) All teachers in the nation will have the training and support they need to help students learn computers and the information highway. (2) All teachers and students will have multimedia computers. (3) Every classroom will be connected to the information highway; and (4) Effective software and online learning resources will be an integral part of every school's curriculum. The U.S. Department of Education (1996) estimated the cost at between $50 and $100 billion.

At about the same time, two other federally funded studies also developed cost figures around differing models of education technology. The first (McKinsey and Co. 1995) proposed five potential models for education technology. The models ranged from a more traditional computer lab to a computer at each student's desk and spanned a cost spectrum from $11 to $165 billion. The second (Glennan and Melmed 1996) selected eight "technology rich" schools and extrapolated a national cost.

[5] State assessments for school infrastructures differed substantially from those for education technology. Although few states conducted infrastructure assessments without cost estimates, the opposite was true for education technology.

The 23 states meeting the criteria for assessing infrastructure funding need are listed in alphabetical order by state with the year in which the assessment was conducted in parentheses: Alabama (1999), California (1997), Colorado (1998), Connecticut (1999), Florida (1998), Idaho (1993), Illinois (1996), Iowa (1994), Kentucky (1998), Maine (1998), Minnesota (1999), Nevada (1998), New Mexico (1998), New York

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(1998), North Carolina (1996), North Dakota (1995), Ohio (1999); South Carolina (1998), Tennessee (1999), Texas (1997), Virginia (1998), West Virginia (1997), and Wyoming (1997).

The 26 states meeting the criteria for recent technology assessments or plans are listed with the year in which the assessment was conducted parentheses. Those with asterisks indicate a plan or assessment that also contained a cost estimate. Several plans/assessments carried no date and were not included as "recent": Alabama (1995), California (1995)*, Connecticut (1995)*, Delaware (1999)*, Georgia (1997), Illinois (technology infrastructure only; 1996)*, Indiana (1998), Louisiana (1997)*, Maryland (1998)*, Massachusetts (1998), Michigan (1997), Mississippi (1995), Nebraska (in press), Nevada (1998)*, New Hampshire (1998), New Mexico (technology infrastructure only; 1999)*, Oklahoma (in press), Oregon (1999, draft), Rhode Island (1996), South Carolina (1998), Tennessee (computer hardware and software only; 1999)*, Texas (1998), Vermont (1999), Virginia (1996), Washington (1998), and Wyoming (technology infrastructure only; 1997)*.

[6] The sum is almost three times that cited in the study by the United States General Accounting Office (1995b). It should be understood that the GAO developed its estimates in response to a specific request by Congress to investigate a subset of school infrastructure needs—notably deferred maintenance and repairs and improvements to address health, safety, and accessibility.

[7] For descriptive statistics, see Appendix F. The *average* state need for school modernization is $6.2 billion, and the *median* state need is $3.7 billion. The large difference between the median (midpoint) and the average state need indicates a skewed distribution caused by the presence of a group of states with high need.

[8] The average state need for infrastructure is $5.1 billion, and the median state need is $2.8 billion. Again, the large difference between the median or midpoint and the average state need indicates a skewed distribution caused by the presence of a group of states with unusually high funding needs.

[9] The average state need for education technology is $1.1 billion, whereas the median state need is $689.8 million.

[10] The National Governors' Association and the National Association of State Budget Officers have estimated the budget surplus (see NCSL 1999a; 1999b). See Hovey (1998) on structural deficits.

[11] On the danger of structural deficits, see Hovey (1998); NCSL (1992, 1994).

[12] See NEA (1999a).

[13] The National Defense Education Act reflected Congress' reaction to the launching of Sputnik in 1957 by the former Soviet Union and the concomitant concern for national security if the United States was seen to be losing the "space race." The Elementary and Secondary Education Act of 1965 followed on the heels of the Civil Rights Act of 1964. The Education of All Handicapped Act required that students, regardless of handicapping condition, must receive a free and appropriate education in the least restrictive environment.

Appendix A. Data Tables

Table A1. Funding Need for School Modernization (ranked by total need, US$ billions)

State	Infrastructure	Technology	Total
New York	47,640,000,000[a]	3,035,796,800[c]	50,675,796,800
California	22,000,000,000[a]	10,901,183,414[a]	32,901,183,414
Ohio	23,000,000,000[a]	1,977,840,000[c]	24,977,840,000
New Jersey	20,709,650,065[b]	1,319,695,248[c]	22,029,345,313
Texas	9,467,620,774[a]	4,186,434,432[c]	13,654,055,206
Illinois	9,213,000,000[a]	2,115,098,880[c]	11,328,098,880
Pennsylvania	8,465,134,387[b]	1,943,407,360[c]	10,408,541,747
Massachusetts	8,919,014,500[b]	1,023,047,120[c]	9,942,061,620
Michigan	8,071,127,040[b]	1,852,952,000[c]	9,924,079,040
Utah	8,490,336,757[b]	513,648,800[c]	9,003,985,557
Georgia	7,061,967,931[b]	1,474,984,096[c]	8,536,952,027
North Carolina	6,210,938,727[a]	1,314,586,096[c]	7,525,524,823
Virginia	5,701,313,528[a]	1,190,793,680[c]	6,892,107,208
Washington	5,478,902,777[b]	1,062,603,920[c]	6,541,506,697
Wisconsin	4,762,337,059[b]	955,782,336[c]	5,718,119,395
Arizona	4,748,568,494[b]	920,959,488[c]	5,669,527,982
Nevada	5,256,000,000[a]	317,977,712[c]	5,573,977,712
Connecticut	5,000,000,000[a]	555,226,320[c]	5,555,226,320
Florida	3,300,000,000[a]	2,187,697,936[c]	5,487,697,936
Minnesota	4,517,232,516[a]	906,590,400[c]	5,423,822,916
Maryland	3,891,926,876[b]	893,500,208[c]	4,785,427,084
Colorado	3,805,239,627[a]	738,005,536[c]	4,543,245,163
Missouri	3,475,160,989[b]	975,861,968[c]	4,451,022,957
Louisiana	3,104,098,619[b]	836,972,576[c]	3,941,071,195
Iowa	3,359,129,953[a]	539,794,880[c]	3,898,924,833
Indiana	2,477,797,613[b]	1,059,940,000[c]	3,537,737,613
South Carolina	2,574,018,400[a]	694,044,960[c]	3,268,063,360
Tennessee	2,273,702,904[a]	971,081,920[c]	3,244,784,824
Kentucky	2,441,607,196[a]	685,628,688[c]	3,127,235,884
Oregon	2,407,425,974[b]	579,506,048[c]	2,986,932,022
Oklahoma	2,204,070,041[b]	670,011,792[c]	2,874,081,833
Alabama	1,519,210,061[a]	791,643,056[c]	2,310,853,117
Kansas	1,793,250,000[b]	503,561,280[c]	2,296,811,280
Arkansas	1,761,701,495[b]	494,704,416[c]	2,256,405,911
Nebraska	1,608,849,896[b]	313,754,032[c]	1,922,603,928
New Mexico	1,410,624,747[a]	339,560,288[c]	1,750,185,035
Rhode Island	1,420,952,603[b]	162,989,024[c]	1,583,941,627
Mississippi	1,038,890,864[b]	541,354,640[c]	1,580,245,504
West Virginia	1,000,000,000[a]	322,390,064[c]	1,322,390,064
Delaware	1,046,354,648[b]	120,021,120[a]	1,166,375,768
Montana	901,492,663[b]	175,806,928[c]	1,077,299,591
Idaho	699,469,537[a]	268,321,600[c]	967,791,137
Hawaii	752,533,936[b]	202,909,232[c]	955,443,168
Alaska	727,014,291[b]	141,780,576[c]	868,794,867
Maine	452,064,540[a]	232,710,832[c]	684,775,372
South Dakota	498,604,766[b]	151,570,080[c]	650,174,846
Wyoming	530,888,665[a]	103,532,688[c]	634,421,353
New Hampshire	409,511,478[b]	210,805,584[c]	620,317,062
North Dakota	420,000,000[a]	125,223,536[c]	545,223,536
Vermont	220,090,007[b]	113,296,464[c]	333,386,471
Total	268,238,826,944	53,716,590,056	321,955,416,998

[a] Existing state assessment used to calculate funding need (see Method section for details).

[b] Funding need extrapolated based on ability to match selected demographic and student variables with those of a similar state (see Method section for details).

[c] Funding need calculated using benchmarking or median state need (see Method section for details).

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Table A2.

Funding Need for School Modernization (ranked by infrastructure need, US$ billions)

State	Infrastructure	Technology	Total
New York	47,640,000,000[a]	3,035,796,800[c]	50,675,796,800
Ohio	23,000,000,000[a]	1,977,840,000[c]	24,977,840,000
California	22,000,000,000[a]	10,901,183,414[a]	32,901,183,414
New Jersey	20,709,650,065[b]	1,319,695,248[c]	22,029,345,313
Texas	9,467,620,774[a]	4,186,434,432[c]	13,654,055,206
Illinois	9,213,000,000[a]	2,115,098,880[c]	11,328,098,880
Massachusetts	8,919,014,500[b]	1,023,047,120[c]	9,942,061,620
Utah	8,490,336,757[b]	513,648,800[c]	9,003,985,557
Pennsylvania	8,465,134,387[b]	1,943,407,360[c]	10,408,541,747
Michigan	8,071,127,040[b]	1,852,952,000[c]	9,924,079,040
Georgia	7,061,967,931[b]	1,474,984,096[c]	8,536,952,027
North Carolina	6,210,938,727[a]	1,314,586,096[c]	7,525,524,823
Virginia	5,701,313,528[a]	1,190,793,680[c]	6,892,107,208
Washington	5,478,902,777[b]	1,062,603,920[c]	6,541,506,697
Nevada	5,256,000,000[a]	317,977,712[c]	5,573,977,712
Connecticut	5,000,000,000[a]	555,226,320[c]	5,555,226,320
Wisconsin	4,762,337,059[b]	955,782,336[c]	5,718,119,395
Arizona	4,748,568,494[b]	920,959,488[c]	5,669,527,982
Minnesota	4,517,232,516[a]	906,590,400[c]	5,423,822,916
Maryland	3,891,926,876[b]	893,500,208[c]	4,785,427,084
Colorado	3,805,239,627[a]	738,005,536[c]	4,543,245,163
Missouri	3,475,160,989[b]	975,861,968[c]	4,451,022,957
Iowa	3,359,129,953[a]	539,794,880[c]	3,898,924,833
Florida	3,300,000,000[a]	2,187,697,936[c]	5,487,697,936
Louisiana	3,104,098,619[b]	836,972,576[c]	3,941,071,195
South Carolina	2,574,018,400[a]	694,044,960[c]	3,268,063,360
Indiana	2,477,797,613[a]	1,059,940,000[c]	3,537,737,613
Kentucky	2,441,607,196[a]	685,628,688[c]	3,127,235,884
Oregon	2,407,425,974[b]	579,506,048[c]	2,986,932,022
Tennessee	2,273,702,904[a]	971,081,920[c]	3,244,784,824
Oklahoma	2,204,070,041[b]	670,011,792[c]	2,874,081,833
Kansas	1,793,250,000[b]	503,561,280[c]	2,296,811,280
Arkansas	1,761,701,495[b]	494,704,416[c]	2,256,405,911
Nebraska	1,608,849,896[b]	313,754,032[c]	1,922,603,928
Alabama	1,519,210,061[a]	791,643,056[c]	2,310,853,117
Rhode Island	1,420,952,603[a]	162,989,024[c]	1,583,941,627
New Mexico	1,410,624,747[a]	339,560,288[c]	1,750,185,035
Delaware	1,046,354,648[b]	120,021,120[a]	1,166,375,768
Mississippi	1,038,890,864[b]	541,354,640[c]	1,580,245,504
West Virginia	1,000,000,000[a]	322,390,064[c]	1,322,390,064
Montana	901,492,663[b]	175,806,928[c]	1,077,299,591
Hawaii	752,533,936[b]	202,909,232[c]	955,443,168
Alaska	727,014,291[b]	141,780,576[c]	868,794,867
Idaho	699,469,537[a]	268,321,600[c]	967,791,137
Wyoming	530,888,665[a]	103,532,688[c]	634,421,353
South Dakota	498,604,766[b]	151,570,080[c]	650,174,846
Maine	452,064,540[a]	232,710,832[c]	684,775,372
North Dakota	420,000,000[a]	125,223,536[c]	545,223,536
New Hampshire	409,511,478[b]	210,805,584[c]	620,317,062
Vermont	220,090,007[b]	113,296,464[c]	333,386,471
Total	268,238,826,944	53,716,590,054	321,955,416,998

[a] Existing state assessment used to calculate funding need (see Method section for details).

[b] Funding need extrapolated based on ability to match selected demographic and student variables with those of a similar state (see Method section for details).

[c] Funding need calculated using benchmarking or median state need (see Method section for details).

Table A3.

Funding Need for School Modernization (ranked by technology need, US$ billions)

State	Infrastructure	Technology	Total
California	22,000,000,000[a]	10,901,183,414[a]	32,901,183,414
Texas	9,467,620,774[a]	4,186,434,432[c]	13,654,055,206
New York	47,640,000,000[a]	3,035,796,800[c]	50,675,796,800
Florida	3,300,000,000[a]	2,187,697,936[c]	5,487,697,936
Illinois	9,213,000,000[a]	2,115,098,880[c]	11,328,098,880
Ohio	23,000,000,000[a]	1,977,840,000[c]	24,977,840,000
Pennsylvania	8,465,134,387[b]	1,943,407,360[c]	10,408,541,747
Michigan	8,071,127,040[b]	1,852,952,000[c]	9,924,079,040
Georgia	7,061,967,931[b]	1,474,984,096[c]	8,536,952,027
New Jersey	20,709,650,065[b]	1,319,695,248[c]	22,029,345,313
North Carolina	6,210,938,727[a]	1,314,586,096[c]	7,525,524,823
Virginia	5,701,313,528[a]	1,190,793,680[c]	6,892,107,208
Washington	5,478,902,777[b]	1,062,603,920[c]	6,541,506,697
Indiana	2,477,797,613[b]	1,059,940,000[c]	3,537,737,613
Massachusetts	8,919,014,500[b]	1,023,047,120[c]	9,942,061,620
Missouri	3,475,160,989[b]	975,861,968[c]	4,451,022,957
Tennessee	2,273,702,904[a]	971,081,920[c]	3,244,784,824
Wisconsin	4,762,337,059[b]	955,782,336[c]	5,718,119,395
Arizona	4,748,568,494[b]	920,959,488[c]	5,669,527,982
Minnesota	4,517,232,516[a]	906,590,400[c]	5,423,822,916
Maryland	3,891,926,876[b]	893,500,208[c]	4,785,427,084
Louisiana	3,104,098,619[b]	836,972,576[c]	3,941,071,195
Alabama	1,519,210,061[a]	791,643,056[c]	2,310,853,117
Colorado	3,805,239,627[a]	738,005,536[c]	4,543,245,163
South Carolina	2,574,018,400[a]	694,044,960[c]	3,268,063,360
Kentucky	2,441,607,196[a]	685,628,688[c]	3,127,235,884
Oklahoma	2,204,070,041[b]	670,011,792[c]	2,874,081,833
Oregon	2,407,425,974[b]	579,506,048[c]	2,986,932,022
Connecticut	5,000,000,000[a]	555,226,320[c]	5,555,226,320
Mississippi	1,038,890,864[b]	541,354,640[c]	1,580,245,504
Iowa	3,359,129,953[a]	539,794,880[c]	3,898,924,833
Utah	8,490,336,757[b]	513,648,800[c]	9,003,985,557
Kansas	1,793,250,000[b]	503,561,280[c]	2,296,811,280
Arkansas	1,761,701,495[b]	494,704,416[c]	2,256,405,911
New Mexico	1,410,624,747[a]	339,560,288[c]	1,750,185,035
West Virginia	1,000,000,000[a]	322,390,064[c]	1,322,390,064
Nevada	5,256,000,000[a]	317,977,712[c]	5,573,977,712
Nebraska	1,608,849,896[b]	313,754,032[c]	1,922,603,928
Idaho	699,469,537[a]	268,321,600[c]	967,791,137
Maine	452,064,540[a]	232,710,832[c]	684,775,372
New Hampshire	409,511,478[b]	210,805,584[c]	620,317,062
Hawaii	752,533,936[b]	202,909,232[c]	955,443,168
Montana	901,492,663[b]	175,806,928[c]	1,077,299,591
Rhode Island	1,420,952,603[b]	162,989,024[c]	1,583,941,627
South Dakota	498,604,766[b]	151,570,080[c]	650,174,846
Alaska	727,014,291[b]	141,780,576[c]	868,794,867
North Dakota	420,000,000[a]	125,223,536[c]	545,223,536
Delaware	1,046,354,648[b]	120,021,120[a]	1,166,375,768
Vermont	220,090,007[b]	113,296,464[c]	333,386,471
Wyoming	530,888,665[a]	103,532,688[c]	634,421,353
Total	268,238,826,944	53,716,590,054	321,955,416,998

[a] Existing state assessment used to calculate funding need (see Method section for details).

[b] Funding need extrapolated based on ability to match selected demographic and student variables with those of a similar state (see Method section for details).

[c] Funding need calculated using benchmarking or median state need (see Method section for details).

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Appendix B.

School Modernization Needs Assessment Questionnaire

School Modernization Needs Assessment Questionnaire

NEA Research
June 1999

State Affiliate Education Finance Contact Information:

Are there any changes or corrections to the above information? If so, please write them in.

Please also give us your phone number in case we need to contact you.

Phone number:_____

GENERAL DIRECTIONS: Please supply the information requested. We realize that there is tremendous variation across states in the amount of information available with regard to school modernization and its funding. We also realize that some information must be obtained from state agencies, such as state departments of education, and that some agencies are more willing than others to share it. Conversely, if you are aware of information that you believe would be useful, please include it, even though the information was not requested in the questionnaire. The more information that you are able to provide, the more accurate and complete the final 50-state report will be, allowing you to make cross-state comparisons and state-by-state rankings.

The questionnaire is divided into two sections. The first section requests information on school infrastructure needs, and the second requests information on educational technology.

PLEASE RETURN THE COMPLETED QUESTIONNAIRE BY JULY 14.

Please use the enclosed envelope and affix first-class postage. Please contact Faith Crampton at (202) 822-7465 with any questions or concerns. Many thanks for your time and effort.

Section I
School Infrastructure Needs

Instructions: Please read the text boxes carefully before answering the questions that pertain to them.

A. Statewide Studies of School Infrastructure/Facilities

A number of states have conducted statewide studies of the condition of school infrastructure/facilities—for example, through a state agency, such as a department of education, or through a consultant hired by a state entity for that purpose. Some states conduct these studies routinely; others do so sporadically or not at all. These studies usually contain a great deal of information not otherwise available on the condition of school infrastructure/facilities. In addition, these studies frequently contain information regarding the amount of funding that would be needed to address existing and future infrastructure needs.

1. Has any entity in your state conducted one or more statewide studies of the condition of school infrastructure/facilities?

____ Yes ____ No

If "Yes," answer the following questions. If "No," skip to part B on the next page.

2. Are these studies conducted on a routine basis, and, if so, how frequently?

____ Yes ____ No

Frequency: _____

3. When was the last time a statewide study was conducted? (List year—for example, 1998.)

_____

4. Please attach a copy of the latest statewide study of the condition of school infrastructure/facilities.

____ Study attached.
____ Study not attached. Please explain: _____

B. Comprehensive Definition of School Infrastructure Needs

- *Deferred maintenance.* Deferred maintenance refers to maintenance necessary to bring a school facility up to good condition; that is, a condition where only routine maintenance is required. If a facility is in such poor condition that it cannot be brought up to good condition, or if it would cost more to do so than to construct a new facility, deferred maintenance can refer to replacement of an existing facility.
- *New construction.* New construction may be a response to current overcrowding; to federal, state, or local mandates that require additional facilities, such as class size reduction measures; or to projected enrollment growth. The construction of a new facility includes the building(s); grounds (purchase, landscaping, and paving); and fixtures, major equipment, and furniture necessary to furnish it.
- *Renovation.* Renovation of an existing facility includes renovations for health, safety, and accessibility for the disabled. Renovation may also include renovations necessary to accommodate mandated educational programs.
- *Retrofitting.* Retrofitting of an existing facility applies to such areas as energy conservation (for example, installation of insulation or energy-efficient windows) and technology readiness (for example, electrical wiring, phone lines, and fiber optic cables).
- *Additions to existing facilities.* Additions to existing facilities may be necessary to relieve overcrowding; to meet federal, state, or local mandates, such as class size reduction measures; or to accommodate projected enrollment growth. The cost of additions usually includes the fixtures, major equipment, and furniture necessary to furnish them.
- Major improvements to grounds, such as landscaping and paving.

Please note: Some states use the term *capital outlay* rather than *school infrastructure.* Capital outlay is an older and more traditional term. In some states, the definition of capital outlay may be broader than that of school infrastructure. For example, in some states, capital outlay includes major equipment and/or any equipment above a certain purchase price. Depending on the definition of capital outlay in a particular state, a wide range of equipment might be included—from school buses to photocopiers, for example.

1. With regard to either state or local funding of school infrastructure needs, how does your state's definition of school infrastructure needs compare with the comprehensive definition?

_____ a. My state's definition is the same.
_____ b. My state's definition is different.
_____ c. My state has no definition.

If you answered "b." please explain how your state's definition differs, or attach a definition:

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C. State and Local Funding of School Infrastructure Needs

In many states, financing of school infrastructure remains primarily a local responsibility and is funded by bonds that have been approved by local voter referenda. However, a number of states provide some assistance, although the amount and form of the assistance varies. State assistance can take the form of direct financial assistance to a school district— for example, on a per pupil basis or through payment of debt service for the local bond. State assistance also can take the form of state loans to local school districts. These loans may or may not be subsidized by the state either through advantageous interest rates or partial or total loan forgiveness. States may also issue bonds earmarked for local school districts. The proceeds from the bonds can be distributed as direct fiscal assistance or loans.

1. At the end of the questionnaire is your state's profile from a 1995 GAO facilities report, which used 1994 data. Please read the portion titled "Financial Assistance" under "State's Role in Facilities." Is the description of state financial assistance for school infrastructure/facilities still current?

____ Yes ____ No

2. If "No," give your state's current description below or attach a description:

_____

_____

_____

_____

_____

3. Does your state impose a bond limit or cap on local school districts with regard to financing school infrastructure?

____ Yes ____ No

4. If "Yes," what is the bond limit or cap for financing school infrastructure? (For example, a state may limit local school district bonded indebtedness for financing school infrastructure to a certain percentage of the assessed valuation of property in the school district.)

_____

5. If "Yes," how many school districts in your state have reached the bond limit or cap for financing school infrastructure?

Number of school districts at bond limit or cap _____
Total number of school districts in your state _____

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6. Does your state impose a limit or cap upon local school districts with regard to <u>total</u> bonded indebtedness?

____ Yes ____ No

7. If "Yes," what is the bond limit or cap imposed for <u>total</u> bonded indebtedness? (For example, a state may limit <u>total</u> local school district bonded indebtedness to a certain percentage of the assessed valuation of property in the district.)

_____

8. If "Yes," how many school districts in your state have reached the bond limit or cap for <u>total</u> bonded indebtedness?

Number of school districts at bond limit or cap _____
Total number of school districts in your state _____

9. According to the most recent data available, what does your state spend on school facilities/infrastructure? (Use the number that corresponds to your state's definition of facilities/infrastructure. Do not include routine maintenance expenditures.)

$_____ Fiscal Year*_____

*If your state's fiscal year is different from the standard July 1/June 30 fiscal year, give beginning and ending dates.

Beginning date _____ Ending date _____

10. According to the most recent data available, what is total <u>local</u> expenditure on school facilities/infrastructure in your state? (Use the number that corresponds to your state's definition of facilities/infrastructure. Do not include routine maintenance expenditures.)

$_____ Fiscal Year_____

11. Some states provide breakouts of state and local expenditure on school facilities/infrastructure in greater detail—for example, differentiating between expenditures on new construction versus renovation. Does your state provide these types of breakouts?

_____ Yes _____ No

12. If "Yes," attach documents with the breakouts.

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_____ Attached.
_____ Not attached.
Explain: _____

D. Recent Legislative Activity in School Infrastructure Needs

1. Over the past five legislative sessions (1995-1999), has any new legislation been proposed or passed that would provide more state fiscal assistance to local school districts for school infrastructure needs? (Include all types of fiscal assistance, including state bond bills.)

a. Bills passed into law

____ Yes ____ No

b. Bills proposed but not passed into law

____ Yes ____No

2. If "Yes" to 1.a., describe any bills that have passed into law and the appropriation attached to the new legislation. (Please attach any relevant documents, such as the language of the legislation.)

Bill Number _____ Year Passed _____

Description of Passed Legislation:

_____

_____

_____

_____

_____

Appropriation: $_____

(If more than one bill was passed into law, please use additional sheets.)

3. If you answered "Yes" to 1.b., describe any bills that have been proposed but not passed into law and the appropriation, if any, attached to the bill. (Please attach any relevant documents, such as the language of the legislation.)

Bill Number _____ Year Proposed _____

Description of Proposed Legislation:

_____

_____

_____

_____

_____

Proposed Appropriation: $_____

(If more than one bill was proposed but not passed into law, please use additional sheets.)

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4. Over the past five years (1995-1999), has a legislatively initiated state bond issue to finance school infrastructure needs been placed before state voters?

_____ Yes _____ No

5. If "Yes," when did the vote take place? _____ (Year)

6. If "Yes," what was the amount of bond measure? $ _____

7. Please explain how the proceeds of the state bond issue would have been distributed to local school districts:

_____

_____

_____

_____

_____

8. What was the outcome of the bond initiative?

_____ Passed _____ Failed

9. In your opinion, how favorable is the political climate in your state with regard to passage of legislation to provide higher levels of funding for school infrastructure needs? (Circle one.)

1	2	3	4	5
Very Unfavorable	Somewhat Unfavorable	Neutral	Somewhat Favorable	Very Favorable

10. Please explain the reason(s) for your rating:

_____

_____

_____

_____

_____

E. Willingness to Participate in Pilot Project: State Legislative Change in the Critical Funding Area of School Modernization

The 50-state information generated by this questionnaire will be useful to all state affiliates. Also, the information is a pivotal component in the pilot project, which is designed to assist state affiliates with the greatest need to develop effective legislative strategies in collaboration with state affiliates that have passed school modernization funding legislation.

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The pilot project will bring together a small number of "target" states (i.e., those with the greatest need) with "mentor" states in order to provide networking and assistance. We would like to get an initial idea of those states willing to participate, either as mentor or target states. For this section of the questionnaire, your response applies only to school infrastructure needs. Your answer does not indicate a commitment with regard to participation.

1. Please check one of the responses below:

____ Yes, we might be interested in participating as a mentor state.
____ Yes we might be interested in participating as target state.
____ No, we do not think we would be interested in participating as either.
____ We don't know at this time if we would be interested in participating.

E. Additional Materials

Please enclose any additional materials on school infrastructure that you think may be helpful, even if such information was not specifically requested.

1. Please check one of the responses below:

____ Yes, I have enclosed additional materials.
____ No, I have not enclosed additional materials.

2. If "Yes," please list and/or describe the materials you have included:

_____
_____
_____
_____
_____
_____
_____

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Section II
Education Technology Needs

A. Statewide Studies of Education Technology

A number of states have conducted statewide studies with regard to access to and use of education technology in elementary and secondary schools (K-12). Generally, these studies are either needs assessments or long-range planning documents. Some of these studies also include cost estimates. However, some state studies are broader in nature—for example, covering access to technology for all citizens in a state. Education technology usually comprises a section of this type of study.

Please note: This questionnaire is limited to information with regard to education technology needs for elementary and secondary school (K-12) purposes. It does not include technology used in the school and district for administrative purposes. Neither does it include technology for postsecondary or higher education.

1. Has any entity in your state conducted a statewide needs assessment of K-12 education technology or developed a K-12 education technology plan?

____ Yes
____ No

If "Yes," answer the following questions. If "No," skip to part "B" on the next page.

2. Which of the following has been done? (Check all that apply.)

____ Statewide needs assessment of K-12 education technology
____ State education technology plan (K-12)
____ Statewide study of technology (access for all state citizens)
____ Other. Please explain: _____ _____

3. When were these studies conducted? (Write year in applicable blanks.)

____ Statewide needs assessment of K-12 education technology
____ State education technology plan (K-12)
____ Statewide study of technology (access for all state citizens)
____ Other. Please explain: _____

4. Please attach copies of all studies.

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____ Studies attached.
____ Studies not attached. Please explain: _____

B. Comprehensive Definition of Education Technology Needs

- *Multimedia computers.* These are generally newer, faster, and more powerful computers with sound capability and high-resolution graphics. They usually have an internal CD-ROM and modem, the latter for Internet access.
- *Peripherals.* This a category of computer hardware that includes equipment such as printers, assistive/adaptive devices, digital cameras, scanners, and computer projection units. Assistive/adaptive devices refer to peripherals that enable individuals with physical disabilities or limitations to utilize technology. Peripherals also include various pieces of equipment such as CD-ROMS, Zip drives, and modems that although internally installed on many newer computers are sometimes added externally to older computers.
- *Operating, applications and educational software. Operating software* refers to computer programs, such as DOS and Windows, that provide the foundation for utilizing applications and educational software. *Applications software* includes computer programs such as word-processing and spreadsheets. *Educational software* represents computer programs that are specifically designed for student learning.
- *Connectivity.* Connectivity includes Internet access, video conferencing, and video phones.
- *Networks.* Networks include LANs (Local Area Networks) and WANs (Wide Area Networks). These are computer networks within a school or district.
- *Technology infrastructure.* This includes wiring and cables to, within, and between schools. To accommodate computers and peripherals, electrical upgrades may be needed in order for the school facility to support more electrical outlets. The school may require more phone lines and/or fiber optic cables to support connectivity to the Internet. (Please note that the category of "technology infrastructure" overlaps with "retrofitting" within the comprehensive definition of school infrastructure needs presented in the first section of the questionnaire.)
- *Distance education.* Distance education makes use of a number of components listed above to allow courses to be taught at remote sites.
- *Maintenance and repair of technology equipment.* This includes maintenance contracts and repair costs to keep computers and peripherals functioning properly. It is an ongoing cost over the life of the technology equipment.
- *Professional development and support.* In order for teachers and other educational professionals to make effective use of technology to enhance student learning, they must have access to ongoing professional development and support.

1. With regard to state funding of education technology needs, how does your state's definition of education technology needs compare with the comprehensive definition?

____ a. My state's definition is the same.
____ b. My state's definition is different.
____ c. My state has no definition.

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If you answered "b." please explain how your state's definition differs from the comprehensive definition of education technology needs, or attach a definition:

_____

_____

_____

_____

C. State and Local Funding of Education Technology Needs

This portion of the questionnaire focuses primarily on state funding of education technology needs, but there are some questions with regard to local funding—in particular, whether your state permits local school districts to incur bonded indebtedness for education technology needs.

With regard to state funding, the amount allocated for education technology needs varies tremendously across states, as do the mechanisms for distributing funds to local school districts. Some states provide no funding whatsoever for education technology needs.

1. Does your state provide direct funding to school districts for education technology needs?

____ Yes ____ No

2. If "Yes," which of the following characteristics apply to the funding? (Check all that apply.)

____ Flat grant. (Every funding unit in the state receives the same amount—for example, $100 per pupil—for education technology needs, without application.)

____ School district application necessary.
- ____ All applicants receive funding.
- ____ Funding is competitive. (Funding is contingent on quality of application or total amount of funds available.)

____ Funding is equalized or needs-based. (School district wealth is a component of calculating state aid for education technology needs.)

____ Other. Please explain: _____

3. Does your state provide loans to school districts in order to finance education technology?

____ Yes ____ No

4. If "Yes," describe the state loan program.

Maximum amount a school district may borrow: $ _____

Maximum length of loan repayment in years: _____

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Terms of loan forgiveness, if any: _____

_____

Subsidized interest rates, if any: _____

Other provisions of the loan program: _____

_____

_____

5. According to the most recent data available, what does your state spend on education technology needs? (Please use the number that corresponds to your state's definition of education technology needs.)

$_____ Fiscal Year*_____

*If your state's fiscal year is different from the standard July 1/June 30 fiscal year, give beginning and ending dates.

Beginning date _____ Ending date _____

6. According to the most recent data available, what is total local expenditure on education technology needs in your state? (Use the number that corresponds to your state's definition of education technology needs.)

$_____ Fiscal Year_____

7. Some states provide breakouts of state and local expenditure on school education technology in greater detail—for example, differentiating between expenditures on equipment versus professional development. Does your state provide these types of breakouts?

_____ Yes _____ No

8. If "Yes," please attach documents with the breakouts.

____ Attached.

____ Not attached.

Explain: _____

9. Does your state permit local school districts to incur bonded indebtedness in order to finance education technology?

_____ Yes _____ No

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10. If "Yes," indicate what categories of education technology needs may be financed through bonds? Refer to page 9 for definitions of the various categories. (Check all that apply.)

____ Multimedia computers
____ Peripherals
____ Operating software
____ Applications software
____ Educational software
____ Connectivity
____ Other. Please explain: _____
____ Networks
____ Technology infrastructure
____ Distance education
____ Maintenance and repair of technology equipment
____ Professional development and support

11. If you answered "Yes" to Question 9, does your state impose a bond limit upon local school districts with regard to financing education technology needs?

_____ Yes _____ No

12. If "Yes," what is the bond limit or cap imposed? (For example, a state may limit total local school district bonded indebtedness to a certain percentage of the assessed valuation of property in the district.)

_____

D. Recent Legislative Activity in Education Technology Needs

1. Over the past five legislative sessions (1995-1999), has any new legislation been proposed or passed that would provide more state fiscal assistance to local school districts for education technology needs? (Include all types of fiscal assistance, including state bond bills.)

a. Bills passed into law

____ Yes ____ No

b. Bills proposed but not passed into law

____ Yes ____ No

2. If you answered Yes to 1.a., describe any bills that have passed into law and the appropriation attached to the new legislation. (Attach any relevant documents, such as the language of the legislation.)

Bill Number _____
Year Passed _____

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Description of Legislation:

_____
_____
_____
_____

Appropriation: $_____

(If more than one bill passed into law, please use additional sheets.)

3. If you answered "Yes" to 1.b., describe any bills that have been proposed but not passed into law and the appropriation, if any, attached to the bill. (Attach any relevant documents, such as the language of the legislation.)

Bill Number _____
Year Proposed _____

Description of Proposed Legislation:

_____
_____
_____
_____

Proposed Appropriation: $ _____

(If more than one bill was proposed but not passed into law, please use additional sheets.)

4. Over the past five years (1995-1999), has a legislatively initiated state bond issue to finance education technology needs been placed before state voters?

_____ Yes _____ No

5. If "Yes," when did the vote take place? _____ (Year)

6. If "Yes," what was the amount of bond measure? $ _____

7. Please explain how the proceeds of the state bond issue would have been distributed to local school districts:

_____
_____
_____
_____

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8. What was the outcome of the bond initiative?

_____ Passed _____ Failed

9. In your opinion, how favorable is the political climate in your state with regard to passage of legislation to provide higher levels of funding for school infrastructure needs? (Circle one.)

1	2	3	4	5
Very Unfavorable	Somewhat Unfavorable	Neutral	Somewhat Favorable	Very Favorable

10. Please explain the reason(s) for your rating:

_____

_____

_____

_____

E. Willingness to Participate in Pilot Project: State Legislative Change in the Critical Funding Area of School Modernization

We would like to get an initial idea of those states willing to participate, either as mentor or target states. For this section of the questionnaire, your response applies only to education technology needs. Your answer does not indicate a commitment with regard to participation.

1. Please check one of the responses below:

____ Yes, we might be interested in participating as a mentor state.
____ Yes, we might be interested in participating as target state.
____ No, we do not think we would be interested in participating as either.
____ We don't know at this time if we would be interested in participating.

F. Additional Materials

Please enclose any additional materials on education technology that you think may be helpful, even if such information was not specifically requested.

1. Please check one of the responses below:

____ Yes, I have enclosed additional materials.
____ No, I have not enclosed additional materials.

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2. If "Yes," list and/or describe the materials you have included:

_____

_____

_____

_____

_____

G. Comments

If you have comments on the questionnaire or the pilot project, please write them below:

_____

_____

_____

_____

_____

THANK YOU FOR COMPLETING THE QUESTIONNAIRE.

PLEASE RETURN BY JULY 14 to: Dr. Faith E. Crampton, NEA, Research, Rm. 610, 1201 16th Street, NW, Washington, DC 20036

For questions, please call (202) 822-7465 or email FCrampton@NEA.org.

Appendix C.
Data Collection Matrixes for School Modernization Needs Assessment

Table C1.
Data Collection Matrix for School Infrastructure Needs Assessment

Variable	Definition	Source of definition	Q[a]	T[b]	Source of data
School infrastructure	Comprehensive definition State definition	Policy/research literature and databases	Yes	As needed	Policy/research literature and databases
Unmet need	Comprehensive definition State definition	Policy/research literature and databases	Yes	As needed	Policy/research literature and databases
Funding formulas and mechanisms	Categorical Competitive vs. entitlement Ongoing vs. time-limited Equalized/needs-based Grants-in-aid vs. loans Bonding authority/limits (State and local)	Policy/research literature	Yes	As needed	Policy/research literature and databases
Fiscal capacity	Year end surpluses/reserves Tax capacity/effort Wealth	Policy/research literature and databases	n.a.	n.a.	Policy/research literature and databases
Legislative activity	n.a.	n.a.	Yes	As needed	NEA Annual "Survey of State School Finance Legislation"
New funding	n.a.	Policy/research literature and databases	Yes	As needed	Policy/research literature and databases
Political feasibility	n.a.	n.a.	Yes	As needed	n.a.

[a]Q = State Affiliate Questionnaire.
[b]T = Telephone follow-up. n.a. = not applicable.

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Table C2.
Data Collection Matrix for Education Technology Needs Assessment

Variable	Definition	Source of definition	Q[a]	T[b]	Source of data
Education technology	**Comprehensive definition** **State definition**	**Policy/research literature and databases**	**Yes**	**As needed**	**Policy/research literature and databases**
Unmet need	Comprehensive definition State definition	Policy/research literature and databases	Yes	As needed	Policy/ research literature and databases
Funding formulas and mechanisms	Categorical Competitive vs. entitlement Ongoing vs. time-limited Equalized/needs-based Grants-in-aid vs. loans Bonding authority/limits (State and local)	Policy/research literature	Yes	As needed	Policy/research literature and databases
Fiscal capacity	Year end surpluses Tax capacity/effort Wealth	Policy/research literature and databases	n.a.	n.a.	Policy/research literature and databases
Legislative activity	n.a.	n.a.	Yes	As needed	NEA Annual "Survey of State School Finance Legislation"
New funding	n.a.	n.a.	Yes	As needed	Policy/research literature and databases
Political feasibility	n.a.	n.a.	Yes	As needed	n.a.

[a] Q = State Affiliate Questionnaire
[b] T = Telephone follow-up. n.a. = not applicable

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Appendix D.

Calculation of Unmet Funding Need for School Infrastructure

Twenty-three of 30 state assessments met the criteria for use in calculating their unmet funding need for school infrastructure. They are listed below in alphabetical order by state with the year in which the assessment was conducted in parentheses. In the second column are states for which unmet funding need was extrapolated based on similarities in selected demographic and student variables with the state in the first column.

Alabama (1999)	Mississippi
California (1997)	
Colorado (1998)	Arizona, Washington
Connecticut (1999)	Delaware, Massachusetts, Rhode Island
Florida (1998)	
Idaho (1993)	
Illinois (1996)	Maryland, Michigan, Pennsylvania
Iowa (1994)	
Kentucky (1998)	Arkansas, Kansas, Missouri
Maine (1998)	New Hampshire, Vermont
Minnesota (1999)	Wisconsin
Nevada (1998)	Utah
New Mexico (1998)	Oregon
New York (1998)	New Jersey
North Carolina (1996)	Georgia
North Dakota (1995)	Oklahoma, South Dakota
Ohio (1999)	
South Carolina (1998)	Hawaii, Louisiana
Tennessee (1999)	Indiana
Texas (1997)	
Virginia (1998)	
West Virginia (1997)	
Wyoming (1997)	Alaska, Montana, Nebraska

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Appendix E.

Calculation of Unmet Funding Need for Education Technology

State plans or assessments for education technology differed substantially from those for school infrastructure. Although few states conducted infrastructure assessments without cost estimates, the opposite was true for education technology. Thirty-eight states had developed technology assessments or plans, with 26 being conducted within the last five years. (Several plans/assessments carried no date. In those cases, they were not included as "recent.") Of these, only 10 had developed cost estimates. Below are listed the 26 states with recent technology assessments or plans with the year in parentheses. Those with asterisks indicate the plan or assessment also contained a cost estimate. In order to calculate states' unmet funding need for education technology, the report had to rely heavily on benchmarking because of the limited number of usable state assessments. Although 10 states had developed cost estimates, analysis of the plans or assessments yielded only 3 that met the criteria set out in the Method section in that they were comprehensive and contained reasonable cost estimates. The three states were California, Delaware, and Connecticut, with Delaware being the benchmark or median state of the group. Unmet funding need for the remaining states plus Connecticut utilized the benchmark method. Although Connecticut had a usable assessment, it was decided to level it up to the benchmark.

Alabama (1995)

California (1995)*

Connecticut (1995)*

Delaware (1999)*

Georgia (1997)

Illinois (technology infrastructure only, 1996)*

Indiana (1998)

Louisiana (1997)*

Maryland (1998)*

Massachusetts (1998)

Michigan (1997)

Mississippi (1995)

Nebraska (in press)

Nevada (1998)*

New Hampshire (1998)

New Mexico (technology infrastructure only, 1999)*

Oklahoma (in press)

Oregon (1999 draft)

Rhode Island (1996)

South Carolina (1998)

Tennessee (computer hardware and software only, 1999)*

Texas (1998)

Vermont (1999)

Virginia (1996)

Washington (1998)

Wyoming (technology infrastructure only, 1997)*

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Appendix F.

Descriptive Statistics

Measure	Infrastructure needs	Technology needs	Total needs
N. of cases	50	50	50
Minimum	2.20090E+08	1.03533E+08	3.33386E+08
Maximum	4.76400E+10	1.09012E+10	5.06758E+10
Range	4.74199E+10	1.07977E+10	5.03424E+10
Sum	2.53854E+11	5.37166E+10	3.07571E+11
Median	2.83906E+09	6.89837E+08	3.71833E+09
Mean	5.07708E+09	1.07433E+09	6.15141E+09
Std. error	1.07476E+09	2.30295E+08	1.22138E+09
Standard dev.	7.59969E+0	1.62843E+09	8.63648E+09
Variance	5.77553E+19	2.65180E+18	7.45888E+19
Skewness (G1)	4.098	4.819	3.621

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Appendix G.

State Assessments of School Infrastructure and Education Technology and Related Materials

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